

Supplemental Table 1. Sensitivity analysis of the proportion of women at different time intervals with all cases and excluding women who either only remembered the season of the year (beginning, middle or end of the year) or a year for the date of first symptom(s) recognition or clinical presentation among women with breast cancer diagnosed from 2017 - 2018, Addis Ababa, Ethiopia

Time intervals	All cases	After exclusion
	Proportion (95% CI)	Proportion (95% CI)
Patient intervals		
≤30 days	51.1% (46.2%, 55.8%)	63.7% (58.2%, 68.9%)
31 - 90 days	13.2% (10.2%, 16.8%)	16.5% (12.7%, 21.0%)
91 - 180 days	16.3% (13.0%, 20.2%)	10.3% (7.4%, 14.3%)
181 - 365 days	8.2% (5.8%, 11.2%)	5.1% (3.1%, 8.3%)
>365 days	11.3% (8.5%, 14.7%)	4.2% (2.4%, 7.1%)
Patient delay (>90 days)	35.7% (31.1%, 40.3%)	20.0% (15.9%, 24.9%)
Median Patient interval (IQR)	30 (6 - 132) days	21 (6 - 60) days
Diagnostic intervals		
≤30 days	30.8% (26.7%, 35.3%)	35.6% (30.9%, 40.5%)
31 - 90 days	26.3% (22.0%, 30.6%)	29.0% (24.7%, 33.8%)
91 - 180 days	15.0% (11.9%, 18.6%)	13.8% (10.7%, 17.7%)
181 - 365 days	10.2% (7.6%, 13.4%)	9.4% (6.8%, 12.8%)
>365 days	17.7% (14.3%, 21.5%)	12.0% (9.1%, 15.7%)
Diagnosis delay (>30 days)	69.1% (64.6%, 73.3%)	64.4% (59.4%, 69.1%)
Median diagnosis interval (IQR)	69 (22 – 213) days	56 (19 – 150) days

CI: Confidence interval; IQR: Inter quartile range

Those women who either only provided the year of first symptom recognition or first medical consultations pooled the estimates to the right because they were more likely to be late presenter (has highest waiting interval).

Supplemental Table 2. Main reasons for waiting for longer than 3 months following recognition of breast cancer symptoms, and waiting for over a year before diagnostic confirmation among women with breast cancer diagnosed from 2017 - 2018, Addis Ababa, Ethiopia

Main reasons	n (%)
Main reasons given by the patients for patient delay (>3 months) (n = 149) *	
Not bothered by the problem at first	103 (69.1)
Using holy water/ visiting a traditional healer first	26 (17.4)
Being busy at home or at her job	19 (12.7)
Being the first symptom painless lump	17 (11.4)
Afraid of the treatments, including potentially losing my breast	9 (6.0)
Did not know where an appropriate medical facility was found	8 (5.3)
Did not want to expose her breast problem to anyone	8 (5.3)
Afraid of being examined by a doctor or other health provider	6 (4.0)
Afraid of examination results	6 (4.0)
Thought treatment might be too expensive	3 (2.0)
Main reasons given by the patients for diagnostic delay for over a year (n = 78)	
Provider related reasons	
Wrong diagnosis of the sign/symptoms	20 (25.6)
Negative result from Ultrasound/Biopsy	3 (3.8)
Unhappy with the approaches of the physician at first contact	3 (3.8)
Patient related reasons	
Traditional medicine use (traditional healers and holy water)	16 (20.5)
Fear of cancer diagnosis and treatment (breast surgery)	14 (17.7)
Time constraints	5 (6.4)
Lack of awareness about disease severity	5 (6.4)
Financial constraints	3 (3.8)
Frustrated by the advice of the physician	2 (2.6)
Do not declare their reasons	7 (9.0)

*The percentage do not sum to 100 because multiple responses were possible.

Supplemental Table 3. Factors associated with patient delay (>90 days) and diagnostic delay (>30 days) among women with breast cancer diagnosed from 2017 – 2018 Addis Ababa city, Ethiopia

Patient characteristics	Patient delay (>90 days)			Adjusted	Diagnostic delay (> 30 Days)			
	n(%)	Unadjusted			n(%)	Unadjusted		Adjusted
		PR (95% CI)	P-value			PR (95% CI)	P-value	
Age at diagnosis								
<40	55(30.5%)	Ref.		Ref.	133(71.9%)	Ref.		Ref.
40 – 59	66(37.7%)	1.23(0.92, 1.65)	0.157	1.27(0.96, 1.69)	128(68.1%)	0.94(0.82, 1.08)	0.423	0.97(0.85, 1.11)
≥60	28(45.2%)	1.47(1.03, 2.10)	0.030	1.24(0.82, 1.87)	44(64.7%)	0.90(0.73, 1.09)	0.296	0.89(0.71, 1.11)
Family size								
≤ 2	22(36.6%)	Ref.		Not included	47(72.3%)	Ref.		Not included
3 – 5	80(32.4%)	0.88(0.60, 1.29)	0.521		178(68.5%)	0.94(0.79, 1.12)	0.533	
≥6	47(42.7%)	1.28(0.78, 1.73)	0.450		80(68.9%)	0.95(0.78, 1.15)	0.633	
Participants' education								
Not attended school	40(51.3%)	2.19(1.42, 3.38)	0.000	1.52(0.91, 2.53)	60(68.9%)	1.02(0.84, 1.25)	0.774	1.02(0.84, 1.23)
Primary school	35(31.8%)	1.36(0.85, 2.16)	0.190	1.06(0.65, 1.73)	82(73.2%)	1.09(0.91, 1.30)	0.328	1.03(0.84, 1.26)
Secondary school	53(38.6%)	1.63(1.06, 2.51)	0.025	1.39(0.89, 2.16)	96(67.6%)	1.00(0.84, 1.20)	0.921	1.06(0.83, 1.35)
Diploma and above	21(23.3%)	Ref.		Ref.	67(67.0%)	Ref.		Ref.
Marital status								
Married	80(33.2%)	0.84(0.65, 1.09)	0.205	0.99(0.76, 1.27)	172(67.4%)	0.94(0.83, 1.06)	0.359	0.92(0.81, 1.04)
Single, widowed or divorced	69(39.2%)	Ref.		Ref.	133(71.5%)	Ref.		Ref.
Had outdoor job								
No	90(39.5%)	1.26(0.96, 1.64)	0.084	1.03(0.77, 1.38)	168(69.1%)	0.99(0.88, 1.13)	0.990	1.02(0.89, 1.17)
Yes	59(31.2%)	Ref.		Ref.	137(69.2%)	Ref.		Ref.
Partner's education (n=241)								
Not attended school	13(54.2%)	2.04(1.22, 3.41)	0.006	Not included	17(65.4%)	0.94(0.69, 1.29)	0.744	Not included
Primary school	21(37.5%)	1.41(0.86, 2.31)	0.168		41(71.9%)	1.04(0.84, 1.29)	0.692	
Secondary school	24(30.7%)	1.16(0.71, 1.89)	0.551		52(63.4%)	0.92(0.74, 1.14)	0.452	
Diploma and above	22(26.5%)	Ref.			62(68.9%)	Ref.		

(Continued)

Supplemental **Table 3.** continued

Patient characteristics	Patient delay (> 90 days)				Diagnostic delay (>30 days)			
	n(%)	Unadjusted		Adjusted PR (95% CI)	n(%)	Unadjusted		Adjusted PR (95% CI)
		PR (95% CI)	P-value			PR (95% CI)	P-value	
Partner's employment (n=241)								
Employed	52(32.9%)	0.97(0.67, 1.42)	0.897	Not included	110(66.3%)	0.95(0.79, 1.13)	0.576	Not included
Not employed	28(33.7%)	Ref.			62(69.6%)	Ref.		
Family monthly income								
<61.0 \$	51(39.5%)	1.42(0.96, 2.08)	0.074	1.14(0.76, 1.72)	96(71.1%)	1.10(0.92, 1.32)	0.258	1.03(0.84, 1.26)
61.0 - 194.0 \$	71(37.2%)	1.33(0.92, 1.93)	0.126	1.14(0.79, 1.65)	141(70.5%)	1.09(0.92, 1.30)	0.272	1.06(0.89, 1.26)
>194.0 \$	27(27.8%)	Ref.		Ref.	68(64.1%)	Ref.		Ref.
Ever give birth								
No	28(34.5%)	Ref.		Not included	59(69.4%)	Ref.		Not included
Yes	121(36.0%)	1.04(0.74, 1.45)	0.809		246(69.1%)	0.99(0.85,1.16)	0.955	
# of alive children (n=336)								
≤ 2	57(31.0%)	Ref.		Not included	136(69.7%)	Ref.		Not included
3 – 4	41(38.7%)	1.24(0.90, 1.72)	0.178		76(68.5%)	0.98(0.83, 1.14)	0.817	
≥5	23(50.0%)	1.61(1.12, 2.31)	0.009		34(68.0%)	0.97(0.78, 1.20)	0.815	
Source of medical expenses								
Out of pocket		Not included			211(67.4%)	0.99(0.74, 1.31)	0.952	0.97(0.73, 1.29)
Free medical care					77(74.7%)	1.09(0.82, 1.47)	0.524	1.09(0.81, 1.47)
Health insurance					17(68.0%)	Ref.		Ref.
Ever heard of BC^a								
No	58(43.3%)	1.34(1.04, 1.74)	0.024	1.17(0.89, 1.53)	104(73.2%)	1.08(0.95, 1.23)	0.187	0.95(0.83, 1.09)
Yes	91(32.2%)	Ref.		Ref.	201(67.2%)	Ref.		Ref.
Practiced BSE^a								
No	123(37.9%)	1.35(0.95, 1.93)	0.091	1.15(0.81, 1.63)	236(68.6%)	0.96(0.83, 1.11)	0.626	Not included
Yes	26(27.9%)	Ref.		Ref.	69(71.1%)	Ref.		
Breast pain as first symptom								
No	140(36.6%)	1.42(0.79, 2.54)	0.230	1.44(0.83, 2.50)	270(68.2%)	0.87(0.73, 1.03)	0.130	0.85(0.71, 1.02)
Yes	9(25.7%)	Ref.		Ref.	35(77.8%)	Ref.		Ref.

Painless lump as first symptom								
No	27(32.1%)	Ref.		Not included	68(70.0%)	Ref.		
Yes	122(36.6%)	1.13(0.80, 1.60)	0.453		237(68.9%)	0.98(0.84, 1.13)	0.818	Not included
Breastfeeding during symptom recognition								
No	135(35.1%)	Ref.		Ref.		Not included		
Yes	14(42.4%)	1.20(0.79, 1.83)	0.381	1.38(0.93, 2.05)				
Participant's appraisal of first symptom/sign								
Cancer	11(33.3%)	Ref.		Ref.				
Breast swelling	46(30.6%)	0.92(0.53, 1.57)	0.762	0.78(0.46, 1.34)		Not included		
Attributed to others	92(39.3%)	1.17(0.70, 1.96)	0.525	0.96(0.57, 1.61)				
Traditional medicine use^a								
No	112(30.7%)	Ref.		Ref.		Not included		
Yes	37(71.1%)	2.31(1.83, 2.92)	0.000	2.13(1.68, 2.71) ***				
Means of symptom detection		Not included						
Self-detected					291(69.7%)	Ref.		
Health care provider					14(58.3%)	0.83(0.59, 1.17)	0.308	0.77(0.53, 1.10)
Progression of symptoms^b		Not included						
No					259(72.1%)	Ref.		Ref.
Yes					46(56.1%)	0.77(0.63, 0.95)	0.015	0.73(0.60, 0.90)***
First medical consultation		Not included						
Public health center					122(77.7%)	1.25(1.08, 1.44)	0.002	1.19(1.02, 1.39)*
Public hospital					71(68.9%)	1.11(0.93, 1.32)	0.222	1.11(0.94, 1.32)
Private hospital/clinic					112(61.9%)	Ref.		Ref.
# of health facilities visited before diagnosis		Not included						
≤3					218(65.1%)	Ref.		Ref.
≥4					87(82.1%)	1.26(1.12, 1.42)	0.000	1.24(1.10, 1.40)***

\$US dollar; Ref.: reference value; ^abefore symptom recognition; ^bbefore medical consultation; PR: Prevalence Ratio; BC: Breast Cancer, BSE: Breast Self-Examination; #number;

*p < 0.05, **p < 0.001, ***p < 0.001.